

# **EXHIBIT A**

# **Exhibit A**

**U.S. Pat. No. 9,218,156**  
**Claim 7**

**'156 PATENT****7. A device comprising:**

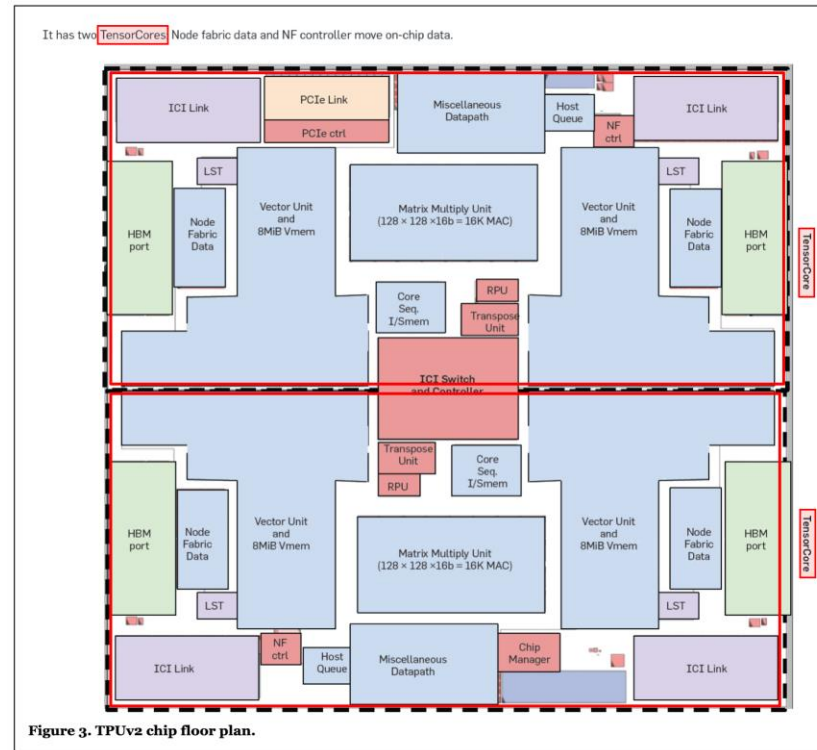
at least one first low precision high-dynamic range (LPHDR) execution unit adapted to execute a first operation on a first input signal representing a first numerical value to produce a first output signal representing a second numerical value,

wherein the dynamic range of the possible valid inputs to the first operation is at least as wide as from 1/1,000,000 through 1,000,000 and for at least  $X=5\%$  of the possible valid inputs to the first operation, the statistical mean, over repeated execution of the first operation on each specific input from the at least  $X\%$  of the possible valid inputs to the first operation, of the numerical values represented by the first output signal of the LPHDR unit executing the first operation on that input differs by at least  $Y=0.05\%$  from the result of an exact mathematical calculation of the first operation on the numerical values of that same input;

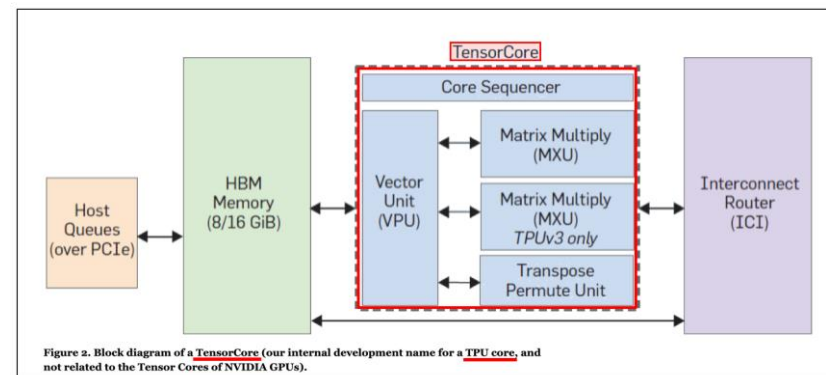
at least one first computing device adapted to control the operation of the at least one first LPHDR execution unit

wherein the at least one first computing device comprises at least one of a central processing unit (CPU), a graphics processing unit (GPU), a field programmable gate array (FPGA), a microcode-based processor, a hardware sequencer, and a state machine; and,

wherein the number of LPHDR execution units in the device exceeds by at least one hundred the non-negative integer number of execution units in the device adapted to execute at least the operation of multiplication on floating point numbers that are at least 32 bits wide.

**INFRINGEMENT EVIDENCE**

<https://cacm.acm.org/magazines/2020/7/245702-a-domain-specific-supercomputer-for-training-deep-neural-networks>



*Id.*